



Mark Scheme (Results)

January 2016

BTEC Level 1/Level 2 First Award
Construction and the Built Environment
(21492E01)

Unit 1: Construction Technology

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- All marks on the mark scheme should be used appropriately.
- All marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if a candidate's response is not worthy of credit according to the mark scheme.
- Where some judgment is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt about applying the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed-out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question Number	Answer	Mark
1	1 mark for each of: Soffit – weather resistance Sprinkler system – fire protection	(2)

Question Number	Answer	Mark
2(a)	1 mark for each of: <ul style="list-style-type: none"> • Keeps sound/noise in • Keeps sound/noise out • To resist the passage of sound/noise through a structure • Preventing nuisance noise from adjacent neighbours/ reduce complaints • Reduced external infrastructure noise • Limits the effects of aircraft noise • Provide confidentiality/privacy • Limits the effects of sound/noise pollution <p>Accept any other appropriate answers Up to a maximum of two marks</p>	(2)

Question Number	Answer	Mark
2(b)	A – carpeting D – triple glazed windows	(2)

Question Number	Answer	Mark
3(a)	1 mark for each: <ul style="list-style-type: none"> • To preserve/conserves(finite) resources for future generations • To minimise the impact of construction activities on the natural environment • To reduce building energy use • To reduce carbon emissions to the atmosphere/reduce carbon footprint • To reduce pollution and wastage • Increased building lifespan • Promote local economic sustainability/industry and trades/helps local suppliers <p>Accept any other appropriate answers Up to a maximum of two marks</p> <p>Do not accept biodiversity alone</p>	(2)

Question Number	Answer	Mark
3(b)	B – prefabrication of elements E – using local suppliers	(2)

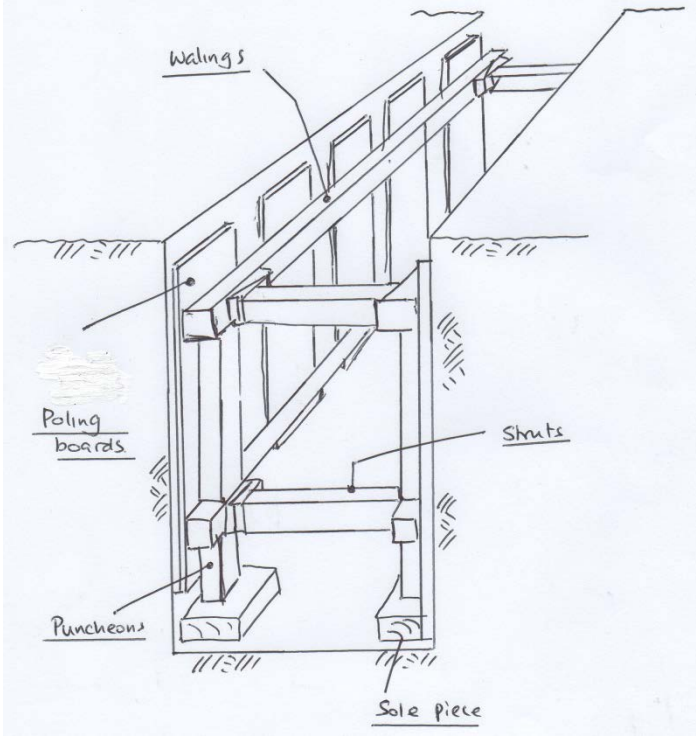
Question Number	Answer	Mark
3(c)	1 mark for each of: <ul style="list-style-type: none"> • Stone • Gravel/aggregates • Slate • Timber/timber-based boards • Sheep’s wool • Straw bales • Hemp • Reeds <p>Accept any other appropriate answers Up to a maximum of two marks</p>	(2)

Question Number	Answer	Mark
4(a)	1 mark for each finish identified: <ul style="list-style-type: none"> • Brickwork • Timber • Hemp rendering • Tiling • Slate • Stone • Metal sheeting • Rendering • Cladding • Pebble dash • Paint • uPVC <p>Accept any other appropriate answers Up to a maximum of two marks</p>	(2)

Question Number	Answer	Mark
4(b)	<p>2 marks for each benefit explained: 1 mark for identification of a benefit, and 1 mark for explanation of that benefit.</p> <ul style="list-style-type: none"> • Reduction in onsite wastage (1) due to pre-fabrication (1) • Insulation values achieved through thinner wall construction (1) maximising floor space (1) • Faster erection time (1) resulting in earlier occupancy/maximise cash flow for developer/reduces costs (1) • Requires less skilled labour to erect (1) therefore reducing labour costs (1) • Internal work can commence sooner (1) because the completion of the external envelope can happen after shell is watertight (1) • Strength to weight ratio is very good (1) allows for ease of handling on site (often without the use of cranes) (1) • Lighter than masonry cavity walls (1) so smaller foundations maybe required (1) <p>Accept any other appropriate answers. Up to a maximum of four marks.</p> <p>Do not accept cheap/cheaper form</p>	(4)

Question Number	Answer	Mark
5	<p>1 mark for:</p> <ul style="list-style-type: none"> • (Through the) walls/wall • Columns • Through the frame <p>Accept any other appropriate answers Up to a maximum of one mark</p>	(1)

Question Number	Answer	Mark
6(a)	<p>1 mark for each factor identified:</p> <ul style="list-style-type: none"> • Depth of excavation • Effects of water table • Pressures from adjacent buildings • Loading caused by construction plant • Soil properties/soil stability including ground pressure and angle of internal friction • Distance to opposing face/width of trench • Services <p>Accept any other appropriate answers Up to a maximum of two marks</p>	(2)

Question Number	Answer	Mark
6(b)	<p>Marks should be awarded for appropriate placing of the components of the diagram. Maximum of 4 marks. 1 mark for correct location of:</p> <ul style="list-style-type: none"> • Walings • Poling boards • Puncheons • Struts/steel prop/acrow • Sole piece/plate • Folding wedges  <p>Accept similar valid alternative sketches. Up to a maximum of 4 marks</p>	(4)

Question Number	Answer	Mark
7	<p>1 mark for each label:</p> <ul style="list-style-type: none"> (i) batten/lathe (ii) rafter/roof spar (iii) fascia/fascia board (iv) soffit/soffit board (v) wall plate <p>Accept phonetic spelling Up to a maximum of five marks</p>	(5)

Question Number	Answer	Mark
8	<p>A – weephole D – lintel</p>	(2)

Question Number	Answer	Mark
9	<p>4 marks for two benefits explained. 2 marks for benefits identified, and 2 marks for a linked explanation, up to 2 marks per explanation. Up to a maximum of 4 marks.</p> <ul style="list-style-type: none"> • Good thermal insulation properties (1) as a result of air gap and use of thermally efficient materials/could reduce energy costs or usage (1) • Good sound insulation properties (1) due to both high density materials used and cavity (1) • Restricts moisture passing through a wall (1) – moisture within the cavity runs down to weepholes (1) • Fire resistance (1) because materials not flammable (1) • Aesthetics (1) due to variety of finishes available (1) • Can support/transfer loads (1) reducing the requirement for a structural frame (1) • Proven durable/long lasting construction (1) good public perception/confidence improves selling potential (1) <p>Accept any other appropriate answers Up to a maximum of four marks</p>	(4)

Question Number	Answer	Mark
10	<p>Any two from the following explanations of the advantages of a flat roof compared to a pitched roof. 1 mark per advantage identified, and 1 mark for a linked explanation, up to 2 marks per explanation.</p> <ul style="list-style-type: none"> • Speed of erection (1) so labour costs are reduced (1) • First floor windows are not compromised by roof line (1) because of reduced elevation (1) • Creation of terrace (1) that can be used for outdoor activity/space (1) • There is less impact on the neighbours' view (1) as the roof line is lower (1) <p>Accept any other appropriate answers. Up to a maximum of four marks.</p>	(4)

Question Number	Answer	Mark
11	<p>2 marks for one impact explained. 1 mark for a benefit identified, and 1 mark for a linked explanation, up to 2 marks</p> <ul style="list-style-type: none"> • Use of prefabricated units results in less site wastage (1) due to higher quality assurance practices at prefabrication stage(1) • Use of sustainable materials (1) as timber has low embodied energy / is renewable / ethically sourced(1) • Improves energy efficiency (1) because it is easier to incorporate higher levels of insulation (1) <p>Accept any other appropriate answers Up to a maximum of two marks</p> <p>Do not accept generic responses relating to recyclable, reusable, natural resources or locally sourced materials.</p>	(2)

Question Number	Indicative content	Mark
12	<p>Suspended timber floor</p> <p>Advantages</p> <ul style="list-style-type: none"> • Aesthetically more pleasing, timber floor could be self-finished • Easy to locate services or pipework • Ease of access for maintenance of services or pipe work • Lightweight, does not need heavy duty lifting equipment • Easier to adapt and alter during and after installation <p>Disadvantages</p> <ul style="list-style-type: none"> • Fixing of insulation is more complex • Requires ventilation • Could be subject to dry rot • Could be subject to infestation • Timber can warp and twist creating noisy floors • Excessive alteration for services can affect the structural integrity <p>Concrete beam and block floor</p> <p>Advantages</p> <ul style="list-style-type: none"> • Fast and simple installation resulting in reduced costs/time • Requires limited specialist skills to construct allows for speed of construction and lack of reliance on skilled staff required to be available • Fire insulation • Unaffected by damp or rot • Allows longer spans than timber joists to support greater loading • Intermediate working platform as soon as units are in place allowing other trades to commence work • Easier to incorporate under floor heating. <p>Disadvantages</p> <ul style="list-style-type: none"> • The need for accuracy as beams should not be cut on site • May require lifting equipment for beams of certain sizes • Difficult to alter once installed • Increased load on foundations may require increased foundation design • Requires a finish • Concrete is less sustainable than timber <p>Accept any other valid response</p>	(8)
Level	Descriptor	
0 0 marks	No rewardable material	
1 1-3 marks	A few key points identified, or one point described. The answer may be in the form of a list. Only one viewpoint considered. Points made will be superficial/generic and not applied/directly linked to the	

	situation in the question. The learner shows a basic understanding of floor construction.
2 4-6 marks	Some points identified, or a few key points described. Consideration of more than one viewpoint but there will be more emphasis on one of them. The answer is unbalanced. Most points made will be relevant to the situation in the question, but the link will not always be clear. The learner shows a good understanding of floor construction.
3 7-8 marks	Range of points described, or a few key points explained in depth. Both sides of the case are considered and the answer is well-balanced, giving weight to both viewpoints. The majority of points made will be relevant and there will be a clear link to the situation in the question. The learner shows a developed understanding of floor construction.

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